Artificial Intelligence Methods (G52AIM)

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Module Introduction
Course Information

- G52AIM web pages
  - http://www.cs.nott.ac.uk/~rxq/g52aim.htm
    - All lecture slides and additional notes
    - Coursework (available soon)
    - Assessment
    - Textbooks
    - Course schedule
    - Other resources
    - Previous exam paper/example questions
Course Information

- Lectures
  - Handouts/notes
  - Willingness to answer questions, i.e. mailing list
  - More feedback on coursework

- Teaching method
  - Lectures: approx. 20 hours
  - Jointly taught with Professor Kendall
  - Private study: approx. 20 hours
  - Module mailing list: g52aim@cs.nott.ac.uk
Course Information

- Lecture time - location
  - Friday 3-5pm
  - JC-BSSOUTH-A26+
  - Lecture schedule might be slightly adjusted (enough notice will be given)
Assessment

- Coursework
  - **Coursework I**, 5%
    - 2/3 pages “report/essay” about basics of optimisation
    - Deadline: 23rd March 2010, 3pm
  - **Coursework II**, 20%
    - **Implementation required**
    - Some optimization algorithms on some domain
    - Prefer Java/C++/C#, but no GUI needed!
    - Deadline: 11th May 2010, 3pm
Assessment

- **Exam**
  - 75%
  - Covering all materials in the lectures
  - 6 questions from which you can choose 4

- Some past papers and suggested answers available at the module’s web page
Schedule

- Lecture 1: Introduction & Local search (today)
- Lecture 2: Simulated annealing & Constructive heuristics
- Lecture 3: Tabu search & Algorithm design
- Lecture 4: Genetic programming (gXk)
- Lecture 5: Variable neighborhood search & coursework
Schedule

- Lecture 6: Genetic algorithms
- Lecture 7: Case study (rxq)
- Coursework 1 due
- Lecture 8: Ant algorithms
- Lecture 9: Hyper-heuristics
- Easter holiday
- Lecture 10: Case study
- Coursework 2 due
Course Context

- Related modules
  - G53KRR Knowledge representation and reasoning
  - G53DIA Designing Intelligent Agent
  - G53DSS Decision support methodologies
  - G51IRB Introduction to Robotics
  - G52ARB Advanced Robotics
Textbooks

- Search Methodologies – Introductory tutorials in optimization and decision support techniques*, Burke and Kendall 2005
  - Chap 1: Introduction
  - Chap 4: Genetic Algorithms
  - Chap 5: Genetic Programming
  - Chap 6: Tabu Search
  - Chap 7: Simulated Annealing
  - Chap 8: Variable Neighborhood Search
  - Chap 17: Hyper-heuristics
*available in the library